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PCT/KR2003/002375

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10/534549

REC'D 29 MAR 2005

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT0092	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR2003/002375	International filing date (day/month/year) 07 NOVEMBER 2003 (07.11.2003)	Priority date (day/month/year) 08 NOVEMBER 2002 (08.11.2002)
International Patent Classification (IPC) or national classification and IPC IPC7 C09K 5/10		
Applicant KWON, Dong-Soon		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 03 JUNE 2004 (03.06.2004)	Date of completion of this report 03 MARCH 2005 (03.03.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer CHOI, Seung Keun Telephone No. 82-42-481-5575 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description: _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims: _____, as originally filed
 pages _____, as amended (together with any statement) under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings: _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description: _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language English which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-28	YES
	Claims		NO
Inventive step (IS)	Claims	1-28	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: JP 9-75388 A

D2: JP 53-71691 A

D3: KR 2000-58524 A

The present invention relates to a liquid heating element manufactured by filtering the mixture of raw solid material A which is made by thermally mixing activated carbon, kaolin, copper sulfide and phosphoric acid, raw solid material B made by thermally mixing said solid material A with silicon powder, and a mixture of said solid material B with ethylene glycol (claims 1-12), and a method of manufacturing the same (claims 13-28).

D1 relates to an exothermic composition comprising the mixture of activated carbon, diatomite, thickener, water absorptive polymer, a pH adjustor, and sodium chloride; 철분; and water. D2 relates to an exothermic composition containing at least one catalytic substance selected from the group comprising alkali metal hydrosulfides, carbon nitrides, cementite, activated clay, iron, etc. D3 relates to a method of heating food characterized in making limestone in contact with a phosphorus compound, a peroxide compound or the mixture of both compounds.

The present invention is different from D1-D3 in the purpose: the present invention is to provide a liquid heating element manufactured by mixing raw solid material A which is made by thermally mixing activated carbon, kaolin, copper sulfide and phosphoric acid, with silicon powder, and ethylene glycol; D1 is to provide a creamy exothermic composition facilitating a wafer-thin heating element; D2 is to provide a substance generating heat while in contact with only air other than water; and D3 is to provide a instantaneous heating method for food.
(continued on supplemental sheet)

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

The present invention is also different from D1-D3 in the components and the composing ratios: the present heating composition comprises activated carbon, kaolin, silicon powder, and ethylene glycol; the exothermic composition of D1 is a mixture of activated carbon, diatomite, water absorptive polymer, etc.; the exothermic composition of D2 contains alkali metal hydrosulfides with carbon nitrides having a function as a oxidation catalyst; and the same in D3 contains limestone with phosphorus compound or peroxide compound. In addition, the technical feature of sequentially and thermally mixing silicon powder and ethylene glycol into a mixture of activated carbon, kaolin, etc. of the present invention, and the effect thereby are different from those of D1-D3. Accordingly, the present invention cannot be easily invented by a person skilled in the art with the teaching of D1-D3.

Thus, claims 1-28 are novel and inventive under PCT Article 33(2) and (3).